REMARKS

This amendment and these remarks are responsive to the non-final Office action dated June 4, 2007. A request for a one (1) month extension of time and payment of the associated fee accompanies this response.

Claims:

In the Office action, claims 54-68 were pending. Claims 69-73 were previously withdrawn. By way of this amendment, claims 54 and 63 have been amended. New claims 74-77 have been added. Support for the amendment to claims 54 and 63 can be found for example, at page 23, lines 13-15 page 22, lines 7-16, and throughout the application as filed. Support for new claims 74 and 76 can be found, for example, at page 35, lines 12-14. Support for new claims 75 and 77 can be found, for example, at page 27, lines 22-24. No new matter is added by way of this amendment.

Rejections under 35 USC §102(e) or 35 U.S.C §103(a):

Claims 54-59, and 62-68 are rejected under 35 U.S.C. 102(e) as anticipated by Nelson et al. 6,074,827 or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nelson et al. 6,074,827, in view of Felder et al., 6,232,066. Applicant respectfully traverses this rejection for at least the reasons set forth below.

Claims 54 and 63, as amended, recite that the first and second populations of beads have a standardized, known surface occupancy. An advantage of the beads of the presently claimed invention having standardized, known surface occupancy (e.g., calibrated beads, or beads with known concentrations of surface receptors) over prior art beads is described, for example, at page 15, lines 16-19, with reference to FRET. Another advantage is described at page 15, line, 26-page 16, line 6 with reference to flow cytometry. Methods for standardization of the beads are

described, for example, on page 26, line 16 – page 29, line 7. Additional advantages are described throughout the specification as filed including, for example, at page 37 lines 5-7.

As described throughout the specification, the presently claimed sensors may be used in association with a FRET-based assay. Page 13, lines 11-25 enumerate various requirements that must be met in order for FRET to occur clearly. As described throughout the specification, many of these requirements are aided by the use of beads having a standardized, known surface occupancy.

Nelson et al. does not describe the use of beads with a standardized, known surface occupancy. While Nelson et al. states that the enrichment means may be a bed of polymeric beads…[that] may be coated with antibodies or other target-specific affinity binding moiety…" Nelson is entirely silent as to how such beads might be prepared and at no point mentions calibrating such beads, determining their surface occupancy, or preparing or selecting beads that have a standardized, known surface occupancy. This is likely because Nelson is primarily occupied with enriching for (or isolating) a particular analyte, as opposed to identifying the concentration of one or more analytes in a given sample. Accordingly, there would be no need to calibrate the beads of Nelson in order to perform the stated function of the Nelson invention. Furthermore, Nelson fails to mention the use of FRET at all. As stated earlier, the use of beads with a standardized, known surface occupancy solves many of the problems associated with FRET. Because Nelson does not use, or contemplate, the use of FRET, there is no reason to modify the beads of Nelson so as to be suitable for FRET-based assays.

Furthermore, claims 54 and 63 both recite "a first type of biomolecule bound to each bead in the population and a first type of fluorescent tag bound to each biomolecule." Nelson does not show a fluorescent tag bound to a biomolecule that is bound to a bead. The vast

majority of the examples and description in Nelson use magnetic beads as the method for both capturing the analytes of interest and isolating those analytes from the rest of the sample population without the use of any fluorescent labels. The use of fluorescent labels is limited to Example 7, which describes an affinity-binding capture and release assay used to "separate biological entities of interest in a sample." Col. 33, lines 14-15. In this example, the DNA of interest is amplified to include a dye terminator to be used for fluorescence detection. The amplified DNA including the chromophore and an affinity binding pair (such as, for example biotin – see e.g. col. 33, lines 56-67) is then introduced to the enrichment channel and allowed to interact with "the other member of the binding pair" (e.g. avidin) which is "attached to a solid surface." Col. 33 lines 22-45. Accordingly, in the Nelson assay, it is the analyte of interest that is fluorescently labeled, not the biomolecule (e.g. binding member) attached to the bead.

Finally, applicant submits that Nelson does not teach different populations of beads with different fluorescent labels. The Office action states that Felder teaches that molecules on beads may be labeled, directly or indirectly, with different labels such as fluorescent labels and that the target label can be detected using a variety of procedures including FRET. The Office action continues that it would be obvious to combine the fluorescent labels as taught by Felder with the Nelson invention. It is noted that the Office action does not assert that Felder teaches different populations of beads with different fluorescent labels, only that Felder teaches that different fluorescent labels can be used. Accordingly, applicant respectfully submits that the Office action has not made a *prima facie* showing of obviousness because the Office action has failed to show how the combination renders obvious each and every limitation of the claims.

However, for purposes of clarity, Claims 54 and 63 have been amended to recite "where the first and second types of biomolecules are not found in the same population of beads."

Felder provides a high throughput assay system whereby multiple samples can be tested for the presence of various target substances. Accordingly, Felder teaches arrays of substantially identical test regions, wherein each test region contains a variety of different probes. (See e.g.Col 1, lines 55-57, see also col. 3, lines 27-28.) Because these test regions are "substantially identical," the same probe appears in different test regions (i.e., populations), contrary to the invention as claimed, where the first and second types of biomolecules are in different bead populations.

Accordingly, for at least the reasons set forth above, applicant believes that the currently claimed invention is neither anticipated by Nelson nor rendered obvious by the combination of Nelson and Felder.

Conclusion:

Applicants believe that this application is now in condition for allowance, in view of the above amendments and remarks. Accordingly, applicants respectfully request that the Examiner issue a Notice of Allowability covering the pending claims. If the Examiner has any questions, or if a telephone interview would in any way advance prosecution of the application, the Examiner is requested to please contact the undersigned attorney of record.

Respectfully submitted,

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